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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,530	04/15/2002	Wolfram Angerer	P/3013-13	4126

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NEW YORK, NY 100368403

EXAMINER

VANAMAN, FRANK BENNETT

ART UNIT	PAPER NUMBER
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3618

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,530

Applicant(s)

ANGERER ET AL.

Examiner

Frank Vanaman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Status of Application

1. Applicant's amendment, filed Jan. 30, 2006, has been entered in the application. Claims 16-31 remain pending.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 16-18, 20, 21, 27, 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright (US 6,181,033, filed 12/1999) in view of Roth-Stielow et al (US 6,081,086) and Myers (US 4,330,045, cited previously). Wright teaches an electric drive for a shaft, comprising an electric machine (12, 18) including a stator (14) a rotor (20) to which is connected a drive shaft (26) with an end (right of 26, figure 1) which is connected to the rotor, extending through the electric machine, the rotor, stator and shaft all being coaxial, the motor including a power control unit (mounted to PC board 40) arranged at an end surface of the machine, which controls at least one of speed and torque of the motor (col. 3, lines 8-24 and lines 34-47) forming a combination with the motor through mechanical (40, 56, force-fit snap tab 60) and electrical (88) connections. The reference to Wright fails to teach the provision of a braking resistor assembly being arranged in the vicinity of the input or output shaft circumference, for use when the motor is used in a generating mode.

Roth-Stielow et al. teach an electric motor (5) which is provided with a braking resistor unit (3) positioned in close vicinity to the motor in a terminal enclosure (4) in a rotationally fixed configuration with respect to the motor casing, for use in braking the motor, to dissipate thermal energy when the motor functions as a generator. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the electric machine taught by Wright with the resistor unit taught by Roth-Stielow for the purpose of allowing the motor to be braked electrically rather than mechanically. The reference to Roth-Stielow et al. fails to explicitly teach the positioning of the resistor with respect to the circumference of the shaft, however in view of the location of the control unit taught by Wright, it would have been obvious to one of

ordinary skill in the art at the time of the invention to co-locate the resistor with the driver circuitry for the purpose of reducing electric line lengths.

The reference to Wright as modified by Roth-Steilow et al. fails to teach an end to the shaft which is connectable to a transmission, and thence to a wheel shaft. Myers teaches a motor drive arrangement wherein a motor output shaft (at 34) is connected through a transmission device (e.g., 30, 40, 41, etc.) to drive a wheel shaft (e.g., 45). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the motor taught by Wright and modified by Roth-Steilow et al. with a transmission connected to a wheel shaft as taught by Myers, for the purpose of allowing the motor to rotate a wheel, so as to allow propulsion to occur.

As regards claim 27, while the electric machine taught by Wright and modified by Roth-Steilow et al. and Myers is not explicitly referred to as a transverse flux machine, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a transverse flux machine structure in the arrangement taught by Wright as modified by Roth-Steilow et al. and Myers for the purpose of advantageously employing a transverse flux structure to improve operation.

As regards claim 28, while the reference to Wright as modified by Roth-Steilow et al. and Myers fails to explicitly teach a power supply system, the motor would be inoperative without such a system, and as such, the provision of a power supply system would be deemed to be well within the skill of the ordinary practitioner for the purposes of allowing the machine to function.

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Roth-Steilow et al., Myers and Kinoshita et al. (US 5,517,401). The reference to Wright as modified by Roth-Steilow et al. and Myers is discussed above and fails to teach the controller element connected to the machine, with the controller arranged at an end surface of the machine, on the circumference. Kinoshita et al. teach an electric machine (3) with a controller unit (101) connected electrically and mechanically to the electric machine, arranged proximate an end surface of the machine wherein the circumference of the controller is located on the circumference of the electric machine

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(see figures 19-22; and col. 9, line 52 through col. 10, line 64). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the electrical machine of Wright as modified by Roth-Steilow et al. and Myers with a controller circuit for operating the motor, wherein the circuit is located proximate an end surface of the machine at its circumference as taught by Kinoshita et al., for the purpose of mounting the circuit close to the machine to reduce line losses and electrical faults, but retain access for maintenance purposes.

5. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Roth-Steilow et al., Myers and Sohnle (US 4,059,778, cited previously). The reference to Wright as modified by Roth-Steilow et al. and Myers is discussed above and fails to teach a plurality of resistor units arrayed in a coaxial direction in an annular shape around the shaft circumference, having a geometrical shape, the resistors being modular and connectable with one another. Firstly, the examiner notes that the duplication of resistor elements in a braking arrangement is very well known in order to accommodate a desired power dissipation greater than that which may be dissipated by a single resistor. Sohnle teaches a power device arrangement for mounting a plurality of elements (12, 14) in a side-by-side arrangement (e.g., 14, 14; 12, 12) wherein the elements are arrayed in a circumferential or annular arrangement about a shaft (17, C), the elements electrically and mechanically connectable to one another as modules, the elements provided on carriers (e.g., 11, 13) having an inner annular shape, being capable of stacking along an axis parallel to the drive shaft, (note figure 2), wherein the arrangement at least partially encloses the drive shaft (figure 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the modular, stacking, circumferentially-enclosing arrangement taught by Sohnle to mount the braking resistors taught by Wright as modified by Roth-Steilow et al. and Myers for the purpose of allowing the resistors to be easily made up in multiples for the purpose of allowing greater resistance values or power accommodation by multiplying boards.

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6. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Roth-Steilow et al., Myers and Lyons (US 5,950,752). The references of Wright, Roth-Steilow et al. and Myers are discussed above and fail to teach the specific provision of a power supply for the machine, including a fuel cell. Lyons teaches a vehicle drive scheme including both an internal combustion engine (18) and a fuel cell (24) for providing power (through 14) to an electric machine (40) via an electrical coupling (28m). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a vehicle power source including a fuel cell and internal combustion engine as taught by Lyons to operate the motor taught by Wright as modified by Roth-Steilow et al. and Myers for the purpose of providing a dual source supply of energy (i.e., the engine and fuel cell) for the purpose of allowing a vehicle to be operated from a fuel cell when it is not feasible to operate it from the internal combustion engine.

7. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of Roth-Steilow et al., Myers and Lateur et al. (US 5,823,280). The references of Wright, Roth-Steilow et al. and Myers are discussed above and fail to teach the electric machine as being used in a vehicle power system including a power supply for the machine, and internal combustion engine being physically coupled to the electric machine, wherein the machine can operate as a generator. Lateur et al. teach a parallel hybrid vehicle having an internal combustion engine (22) which is connected to drive a vehicle (through 62, 20), the engine being physically connected to an electric machine (motor/generator 12) through a coupling (82, 83, see figure 3), so as to allow either or both electric machine and engine to drive the vehicle, the electric machine being operable as a generator and connected to a power supply (24) through a controller (16). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the electric machine of Wright as modified by Roth-Steilow et al. and Myers in a power system including a direct coupled internal combustion engine and power supply as taught by Lateur et al., with the machine having a common structure operable as both a motor and generator, for the purpose of providing the compact electric machine

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in a hybrid vehicle in order to conserve space, by the provision of a more compact motor/controller structure.

Response to Comments

8. Applicant's comments, filed with the amendment, have been carefully considered. As regards the previously set-forth combination, the examiner agrees that the reference to Raby does not fairly teach the resistor elements either in the function as now added to claim 16 or in the structural relationship as now added to claim 31. Note that the newly discovered reference to Roth-Stielow et al., does teach that it is very well known to position braking resistors in close proximity to a motor structure for thermal reasons, and that it is well known to use such a resistor to slow the motor in an electrical braking mode.

FDV 9. Any inquiry specifically concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is 571-272-6701.

Any inquiries of a general nature or relating to the status of this application may be made through either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

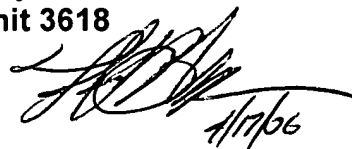
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Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450,

Or faxed to:

PTO Central Fax: 571-273-8300

F. VANAMAN
Primary Examiner
Art Unit 3618



11/17/06